

## Aireen AI software

This case study presents the introduction of the Aireen artificial intelligence system into the private ophthalmology clinic Oculeus. The implementation enabled rapid, non-invasive screening during routine check-ups and improving access to preventive care via preventive care package provided by the clinic. The package includes refraction test by an optometrist, Aireen screening, OCT scan and retinal topography analysis.

### Description of Technology or System

Aireen is a Czech startup specializing in the development of an autonomous AI system for screening and diagnosing chronic diseases using retinal images. The company employs advanced deep neural networks focused on the analysis of retinal blood vessels enabling the rapid detection of changes indicating conditions such as diabetic retinopathy or age-related macular degeneration. The solution can automatically evaluate an image within 60 seconds without the need for pupil dilation and is suitable for use even by less specialized healthcare staff.

### Implementation Process

- Implementation began in 2025
- Stakeholders include the owner and high management of Oculeus, nurses, ophthalmologists, patients, Aireen a.s.
- Steps: Software implementation, training, real-time usage monitoring.

### Impact and Results

- Quantitative: 72 eyes analysed by Aireen since June 2025 till november 2025. 12 of these were rated unassessable.
- Qualitative: increased capacity in retinal analysis even without an ophthalmologist present, positive feedback from ophthalmologists.

|                                 |                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Country</b>                  | Czech Republic                                                                                                                                                                                 |
| <b>Institution/Organisation</b> | Czech Technical University in Prague, Faculty of Biomedical Engineering                                                                                                                        |
| <b>Type of setting</b>          | Private ophthalmology clinic                                                                                                                                                                   |
| <b>National Context</b>         | Currently, there is no nationwide screening program for eye diseases in adults in the Czech Republic. Once a year, diabetics aged 12 and older are offered screening for diabetic retinopathy. |

### Success Factors

- Increased capacity for preventive screenings
- Focus on preventive and personalised care

### Challenges and Barriers

- Ensuring good retinal image quality
- Eliminating patients where image analysis failure is expected

### Key Lessons Learned

- Patients are very interested in preventive care, even when it is not covered by health insurance

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